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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/537,109	11/23/2005	Terrance L. Winnington	66515-0001	1276

10291 7590 07/18/2008
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EXAMINER

BHAT, NINA NMN

ART UNIT	PAPER NUMBER
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1797

MAIL DATE	DELIVERY MODE
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07/18/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/537,109	Applicant(s) WINNINGTON ET AL.	
	Examiner N. Bhat	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6-02-2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 4,5,10,11 and 16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,6-9 and 12-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6-2-2005</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The disclosure is objected to because of the following informalities: Applicant is required to include the heading "Brief Description of the Drawings" as well as a brief description of each of the drawings filed with the application. Appropriate correction is required.
2. Claims 4-5, 10-11 and 16 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim can not depend from a multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims 4-5, 10-11 and 16 will not be further treated on the merits.
3. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: providing the reactor housing, the location of the supporting elements within the reactor housing, the location and of the rotating element within the reactor, the inlets and outlets for introducing fluid streams into the reactor. In claim 2, it is not clear what is meant by "means for controlling the residence time" the means should be recognizable. In claim 3, applicant recites that the means for controlling the residence time are perforations or edge features, where are these features located; there is no construction and arrangement of these means within the reactor and cooperating with the parts within the reactor. In claim 5, the term planes with respect to the apparatus generally mean to the artisan the orientation of elements, it is not clear what applicant means by planes in the form of cones, truncated cones, separates or coherent packings.
4. Claims 6-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 6 should be drafted as an independent claim and should not depend from

the apparatus. The process does not further limit the apparatus. The process claims lack clarity in this form. Claim 6 should be drafted as an independent claim, claiming the method of using the apparatus and should include the features of the apparatus within the body of the claim. Independent claims 11 and 12 lack clarity mostly because the apparatus as claimed is not clear as it is unclear what are the features of the thin-film reactor? It is not clear how the process takes place using the reactor as claimed. Suitable explanation and correction is required. Applicant is invited to speak with the Examiner in order to ensure the 112, second paragraph and objections are addressed and if any further assistance is required in order to expedite prosecution if so desired.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3, 6-9 and 12-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Ramshaw et al., US Patent 6,972,113.

Ramshaw teaches a spinning disc reactor which includes a plurality of rotatable discs having a surface on which reactant (15) is supplied by way of a feed (4). The disc is rotated at a high speed and the reactant spills over the surface to form a thin film. The surface (5) is enhanced by using means surface such as a metal mesh which increases the residence time of the reactant (15) on the surface (5) and helps in mixing.[Note the abstract] Ramshaw et al. teach that the feed means may be provided at any suitable position with respect to the rotating surface which allows feed of the reactant. The feed means can be axially aligned with the rotating surface for axial feed. Alternatively the feed means can be positioned such that the feed is paced from the axis of the rotating surface, this arrangement can lead to more turbulence and

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enhanced mixing. Reactant flow from the feed out and subsequently spread out of the trough onto the rotating surface by centrifugal force.[Note Column 5, lines 6-21] Ramshaw et al. teach that there may be provided two generally planar support elements mounted coaxially and generally parallel to each other on an axis of rotation. The facing surfaces of the support elements may be provided with at least one generally circular wall defined about the axis of rotation. And a plurality of concentric walls being divergent with respect to the axis of rotation of the respective support element as shown in Figure 17. The apparatus as described by Ramshaw et al. specifically teaches a centrifugal reactor which residence time control and process of using the apparatus wherein the supporting elements are rotated which provide an enhanced gravitational field, wherein one or more reactants can be introduced on the surface for effecting chemical reactions employing thin film technology that can be used in a spinning cone reactor. Ramshaw et al. teach that the apparatus includes notches and other edge features and perforations in an inclined support plane carrying liquid in an enhanced gravitational field. The process of using the Ramshaw et al. renders applicant's process unpatentable and the apparatus as claimed by Ramshaw et al. is fully capable of performing the steps of reacting two chemical reactants on a apparatus for chemical process comprising an axis about which a plurality of supporting elements are rotated to provide an enhanced gravitational field; each support element is inclined to the axis wherein a flowable and reactive component can pass from one support element in a controlled way. The flows of the feed materials or reactant although not specified in terms of the Reynolds number, the flows provided on the spinning disc reactor is inherently capable of providing flows having Reynolds numbers within the range as claimed by applicant and applicant's apparatus and process are fully anticipated by Ramshaw et al.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ramshaw et al.'063' teach a rotating surface of revolution reactor with shearing mechanisms. Vander May et al. teach a thin film rotating reactor. Hull teaches a method of operating surface reactors.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Bhat whose telephone number is 571-272-1397. The examiner can normally be reached on Monday-Friday, 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. Bhat/
Primary Examiner, Art Unit 1797